

## Research on Drugs-Crime Linkages: The Next Generation

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### Introduction

The association between drugs and crime in the public mind is so strong that a recent psychology experiment showed the word “drug” tightly linked to such words as “choke,” “knife,” “fight,” and “wound” in participants’ associative memory networks (Bushman, 1996). Although it is routine in academia to deride public ignorance of all things criminological, in this case the public is hardly deluded. Consider the following facts:<sup>1</sup>

- Across 35 cities in 1998, between 40 and 80 percent of male arrestees in the Arrestee Drug Abuse Monitoring (ADAM) Program tested positive for at least one drug at arrest (Arrestee Drug Abuse Monitoring Program, 1999).
- Nearly one-quarter (22 percent) of Federal prison inmates and one-third (33 percent) of State prison inmates—nearly 40 percent of State inmates convicted of robbery, burglary, or motor vehicle theft—reported being under the influence of drugs at the time of their offense (Bureau of Justice Statistics, 1997a, 1997b).
- Among State and Federal prison inmates, 27 percent of those serving sentences for robbery and 30–32 percent of those serving sentences for burglary said they committed their offense to buy drugs (Bureau of Justice Statistics, 1991a, 1991b).
- In the 70 percent of cases in which the victim formed an opinion, 31 percent believed the offender was under the influence of drugs or alcohol (National Crime Victimization Survey, 2000).
- A recent estimate of the economic costs of drug abuse reported that 60 percent were associated with crime and criminal justice (Harwood, Fountain, and Livermore, 1998).

Considerable complexities and nuances underlie these associations. Although many of these subtleties were anticipated by astute observers in the 1970s (see Gandossy et al., 1980), the past decade has seen a solid scholarly consensus form around the following principles (see Fagan, 1990; Parker and Auerhahn, 1998; White and Gorman, 2000):

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<sup>1</sup> Except where noted, these statistics were reported in *Drug-Related Crime* (Office of National Drug Control Policy, 2000).

1. Many different data sources establish a raw correlation between drug use and other criminal offenses. But correlation does not equal causation: In principle, drug use might cause (promote, encourage) crime; criminality might cause (promote, encourage) drug use; and/or both might be caused (promoted, encouraged) by some set of “third variables”—environmental, situational, dispositional, and/or biological. In fact, all three pathways have empirical support in at least some settings and populations.
2. These causal influences are probabilistic, not deterministic. Most drug users are not otherwise criminally active, and the vast majority of drug-using incidents neither cause nor accompany other forms of criminality. Nevertheless, drugs clearly play an important causal role in violent and property crime.
3. These causal influences are contingent, not unconditional. There is little evidence that drug use per se directly causes people to become aggressive in some direct and unconditional manner or that criminality per se causes someone to use drugs. The drugs-crime link varies across individuals, over time within an individual’s development, across situations, and possibly over time periods (as a function of the dynamics of drug epidemics and, possibly, drug control policies).
4. That drug use can causally influence criminality does not necessarily implicate the psychopharmacological properties of the drug. Intoxication, the need or desire to raise money to buy drugs, and the nature of illicit markets are distinct mechanisms by which drugs can cause crime. Thus, drug prohibition cannot be only a *response* to drug-related crime, but it may also be a *causal antecedent* to some drug-related crime.
5. Alcohol is a drug, and it stimulates or augments a great deal of criminal behavior, almost certainly more than the street drugs combined.

We expect that understanding the considerable heterogeneity of effects across users, substances, cities, neighborhoods, and situations—and the interactions among these factors—will be the central focus of drugs-crime research during the remainder of this decade. This paper reviews the existing literature, focusing particular attention on Goldstein’s (1985) taxonomy, the temporal dynamics of drug markets, and the consequences of prohibition. These highlight some of the questions that should drive this research.

## **Drugs-Crime Linkages: Expanding the Goldstein Taxonomy**

### **Goldstein’s framework**

Paul Goldstein’s (1985) conceptual essay offered a tripartite classification of drugs-violence connections:

- **Psychopharmacological:** Violence due to the direct acute effects of a psychoactive drug on the user.

- **Economic-compulsive:** Violence committed instrumentally to generate money to purchase expensive drugs.
- **Systemic:** Violence associated with the marketing of illicit drugs, such as turf battles, contract disputes, and so on.

Goldstein and his colleagues (Brownstein et al., 1992; Goldstein et al., 1989; Goldstein, Brownstein, and Ryan, 1992) applied this scheme empirically to homicides in New York State (1984) and New York City (1988). They found that drugs and alcohol were important causes for a large share of all homicides in both samples. For 1988, near the height of the crack epidemic, they classified 53 percent of 414 homicides as drug or alcohol related; there was also a substantial percentage whose drug-relatedness could not be determined. Of those homicides that could be determined to be drug or alcohol related, 14 percent were psychopharmacological (68 percent alcohol, 16 percent crack), 4 percent were economic-compulsive, and 74 percent were systemic (61 percent crack, 27 percent powder cocaine). By contrast, in 1984, before the crack surge, only 42 percent of homicides were drug or alcohol related; 59 percent of those were psychopharmacological (79 percent alcohol), 3 percent were economic-compulsive, and 21 percent were systemic. The difference between the findings of the two years might reflect differences in geography to some extent (New York State versus New York City), but it also reminds us that these numbers are not eternal verities; they result from complex and historically dependent market dynamics.

### Subsequent applications

The generalizability of Goldstein et al.'s (1989) original findings were limited by their location (New York) and timing (the height of the crack explosion; see U.S. Sentencing Commission, 1995, 106).<sup>2</sup> Many studies have tried to determine whether crimes were drug related, but few have assessed whether the offender's drug need, drug use, or role in the drug market was directly responsible for the crime. Although most of the studies that used this framework were conducted by Goldstein and his colleagues in New York (Parker and Auerhahn, 1998), there are others worthy of attention, especially given their unique approaches. General findings include the following:

1. Non-NDRI (National Development and Research Institutes, Inc.) studies of New York City in the mid- to late 1980s found that crack sellers are more violent than other drug sellers and that their violence is not confined to the drug-selling context (U.S. Sentencing Commission, 1995, citing Fagan and Chin, 1990).

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<sup>2</sup> In fact, Goldstein et al.'s (1989) findings might not fully represent New York City since they did not look at the entire population or a random sample of homicides. Rather, they chose one zone in each of four different boroughs, with the goal of sampling precincts that represented a cross-section of New York City.

2. Studies of juvenile delinquents in Miami in the mid- to late 1980s found that they were much more likely to commit a drug-related economic-compulsive crime than a psychopharmacological or systemic crime (Inciardi, 1990).<sup>3</sup>
3. The per capita drug-related homicide rate remained fairly stable in Chicago from 1973 to 1984 and fluctuated from 1985 to 1995 (data are from the Chicago Homicide Dataset; Block, Block, and Illinois Criminal Justice Information Authority, 1998). Despite the fluctuations, the 1995 homicide rate was strikingly similar to the 1985 rate for all drug-related motives except for homicides that resulted from a drug transaction; the latter increased tenfold from 1985 to 1995.
4. Results from Lattimore et al.'s (1997) homicide study of eight cities, which included surveys of local officials and ADAM/UCR (Uniform Crime Reports) analyses for 1985–94, suggest that drugs other than cocaine and crack were not associated with homicide trends “in any discernible way.” They also found that the drug market structure was less associated with violence than was expected.

The Lattimore et al. study questioned the role of crack and systemic crime because the crack markets were described as highly competitive in cities where the homicide rate was declining, increasing, or remaining the same (1997, p. 89). It is not clear, however, that the same conclusions could be drawn if disaggregated homicide rates (by circumstance) were considered. (Additional discussion and methodological descriptions of these studies are reported in appendix A.)

### **Limitations of existing research on the Goldstein framework**

The Goldstein tripartite framework has been a boon to drug research reviewers—it is invaluable as an organizing scheme—but still, we are struck by the relative rarity of actual empirical applications. Existing applications overrepresent New York, and they overrepresent the crack epidemic at its height relative to earlier and later periods. In fairness, the taxonomy was not proposed until 1985, but it could be applied retrospectively to earlier homicide case files. In our view, such comparisons would be invaluable. There has been little consistency in the methods used to implement the scheme (e.g., Goldstein's trained coders versus Inciardi's survey approach). Little has been learned from that methodological diversity because, to our knowledge, no two methods have ever been applied to the same sample of cases for comparative purposes. Indeed, if one imagines a three-dimensional matrix of major cities by time periods by methods, almost every cell is empty and there are almost no vectors with more than one cell occupied. This spotty record makes it hard to identify either temporal trends or the influence of local variations on drug popularity, drug market structures, or policies and enforcement practices. Finally, the scheme has been applied mostly to homicide and less often to other, more prevalent violent crimes.<sup>4</sup>

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<sup>3</sup> These findings challenge the recent generalization by White and Gorman (2000, p. 189) that “the economic motivation explanation has not been supported among adolescents.”

<sup>4</sup> Our understanding is that the new NIBRS (National Incident-Based Reporting System) database perpetuates this. Officers only have to report the circumstances of the offense

Parker and Auerhahn (1998) complain that Goldstein's categories are not mutually exclusive. This critique presumes a classical set-theoretic approach that, in our opinion, is neither feasible nor scientifically useful for drugs-violence research. Mutually exclusive categories are not necessary for scientific classification (Meehl, 1995), and they are usually impossible to achieve using sparse and noisy archival data (Ragin, 2000). But we agree with Parker and Auerhahn's (1998) contention that "the Goldstein tripartite framework . . . is not treated as a set of testable propositions but rather as a set of assumptions about the nature of drug- and alcohol-related violence."

In our view, an understanding of the taxometric properties of drug-related violence ought to emerge inductively from more fine-grained coding of the underlying features of these events—whether various drugs were found as evidence, the results of toxicology on the offender and the victim, various features of witness reports, prior record information, and so on. Because each property or attribute would be coded separately, there would be no effort to force events into a single classification. Psychometric analysis could be used to test the hypothesized latent structure.<sup>5</sup> Such analyses pose enormous logistical difficulties, but the payoffs for advancing our understanding of drug violence would surely justify the effort.

In the remainder of this section, we will examine other ways in which Goldstein's taxonomic scheme might be expanded and refined.

### **Psychopharmacological violence**

The prevailing view about psychopharmacological (as opposed to economic-compulsive or systemic) violence is that it is rare and attributable mostly to alcohol rather than illicit drugs (Fagan, 1990; Parker and Auerhahn, 1998; White and Gorman, 2000). According to Fagan (1990, p. 243):

[I]ntoxication does not consistently lead to aggressive behavior . . . only limited evidence that consumption of alcohol, cocaine, heroin, or other substances is a direct, pharmacologically based cause of crime . . . .

According to Parker and Auerhahn (1998, p. 306):

Our review of the literature finds a great deal of evidence that the social environment is a much more powerful contributor to the outcome of violent

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(which includes drug dealing) for aggravated assaults/homicide (considered one category in the victim-level file).

<sup>5</sup> Approaches might include confirmatory factor analysis, cluster analysis, Q-sort, or Ragin's (2000) fuzzy-set approach. We are less interested in defending a particular method than in pointing out the surprising lack of attention to these measurement and conceptualization issues in the field.

behavior than are pharmacological factors associated with any of the substances reviewed here.<sup>6</sup>

The Goldstein et al. (1989) analysis provides some support for these claims; only 14 percent of the drug-related homicides appeared to be psychopharmacological, and these largely involved alcohol either alone or in combination with other drugs. But one in seven is hardly a trivial fraction, and those results reflect the peak of the crack market wars, when systemic homicides were occurring in unprecedented numbers, inflating the denominator.

**Moderators.** Examining the literature cited in many recent review essays, it is difficult to avoid the suspicion that some authors hold neuropharmacological factors to a stricter standard of proof than the sociological factors under study. If the psychopharmacological claim is that marijuana, heroin, or cocaine ingestion directly promotes violent behavior absent any situational provocation or stressors, then that claim is probably false. But evidence for Drug  $\times$  Situation and Drug  $\times$  Psychology interaction effects hardly exonerates drug use as a causal factor. It may be that no drug is sufficient to produce aggression in isolation from psychological and situational moderators. But it seems clear that some drugs—certainly alcohol—can amplify the psychological and situational facilitators of aggression. Relevant moderators (see Bushman, 1997; Fagan, 1990; Ito, Miller, and Pollock, 1996) include:

- Situational stressors and frustrators (see Ito, Miller, and Pollock, 1996).
- Expectancy effects: personal and cultural beliefs about the effect of the drug on behavior, and local norms about tolerable versus unacceptable conduct when under the influence (e.g., Critchlow, 1986; Stacy, Widaman, and Marlatt, 1990).
- Disinhibition (e.g., Parker and Auerhahn, 1998; but see Fagan, 1990).
- Impaired cognitive functioning, including reduced executive functioning (self-control and decisionmaking ability; Fishbein, 2000; Giancola, 2000), reduced attention to situational cues (Steele and Josephs, 1990), and reduced self-attention (Ito, Miller, and Pollock, 1996).
- Social threats to self-identity or self-esteem (Baumeister, Smart, and Boden, 1996) that seem particularly relevant in “cultures of honor” (see Anderson, 1994; Bourgois, 1996; Cohen et al., 1996).

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<sup>6</sup> Fagan (1990, p. 255) and White and Gorman (2000, p. 185) argue that, if anything, marijuana and opiates serve to suppress aggression. Actually, Bushman’s (1990) meta-analysis found more aggression among marijuana smokers than placebo controls in laboratory experiments. But this effect is partly due to the fact that the placebo controls showed significantly less aggression than nondrug controls, indicating that participants also believed marijuana would induce passivity.

Moreover, the absence of evidence does not equal evidence of absence; the laboratory literature on drugs and aggression is simply too spotty at present to permit any firm conclusions. Almost the entire experimental literature on moderators of the drugs-aggression relationship has examined alcohol rather than illicit drugs.

**Cormorbidity: Drugs in association with mental illness or alcoholism.** A second potential class of moderators of the drugs-aggression link involve comorbid conditions—substance abuse in tandem with schizophrenia or other psychoses, personality disorders, or alcoholism. Numerous studies have identified a high prevalence of illicit substance abuse among individuals diagnosed with psychiatric disorders (e.g., Compton et al., 2000; Kessler et al., 1996; Mueser et al., 2000).<sup>7</sup> The causal nexus of these comorbid conditions is unclear. The MacArthur Violence Risk Assessment Study (Steadman et al., 1998), a prospective followup study of clients admitted to acute psychiatric inpatient facilities, found that substance abuse increased the probability of violent behavior, but this was true for both psychiatric patients and matched community controls. Neither drug dependence nor psychiatric illness predicted subsequent violent crime in a 6-year followup of released jail detainees (Teplin, Abram, and McClelland, 1994).

### **Drug use and victimization<sup>8</sup>**

Increased victimization provides another mechanism by which drugs can become linked with violence. Although this category can be subsumed under Goldstein's psychopharmacological category, treating it as a fourth category might have merit because the causal mechanisms differ and it has been largely neglected by researchers. There are a number of reasons to expect that drug users ought to be particularly vulnerable to criminal victimization, especially when intoxicated. First, intoxicated people often appear (and sometimes are) more vulnerable than other targets for such offenses as robbery, rape, or hate crimes. Second, intoxicated people are often obnoxious, annoying, and/or offensive in their appearance, conduct, and speech. Third, intoxication makes people's conduct unpredictable and ambiguous—intoxication impairs the perception of signals, but it also impairs the transmission of clear signals to others. Finally, in an active illicit drug market, drug sellers are sometimes both intoxicated and flush with cash.

Fagan (1990) notes that the vulnerability of drug users to victimization has been long recognized. For example, Wolfgang (1958) studied "victim-precipitated homicides" by assessing the incidence of intoxication among victims. And Fagan (1990) reviews evidence from animal studies showing that "substances that induce changes in an opponent's behavior might result in increased aggression by a drug-free attacker . . ." (p. 251).

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<sup>7</sup> Note that other psychiatric disorders are less common among substance abusers than substance abuse is among the mentally ill (Miller, 1993).

<sup>8</sup> Beau Kilmer's work on this section was supported by NIDA grant R01DA12724.

Although Goldstein (1985) acknowledged that the victimization of drug users constituted a distinct drugs-violence linkage, he did not include it as a separate category in his classification scheme. Since then, the victimization of drug users has received little attention in the drugs and crime literature. This is not surprising given how difficult it is to assess the relationship. First, as Goldstein (1985) argues, it is difficult to obtain this information because victims do not want to talk to the police while intoxicated and often do not remember the details of the offense; thus, it may go unreported. Second, the victimization surveys that ask about substance use usually include it as a predictor but do not ask whether it contributed to a specific event. Third, many of these surveys only ask about (or report) general drug use, not about specific drugs or the circumstances of their use. Finally, the label “victim” is often problematic when the participants are codisputants; indeed, the “victim” may have initiated the provocation. In our view, these concerns are valid, but they do not undermine the importance of victimization as a research topic.

The ubiquity of alcohol has made it the subject of victimization work for 50 years, and there is general agreement about its role in victimizations, especially sexual assaults. The research on drugs is not as robust, but there are some important findings that should be addressed in future works on drugs and crime. The following sections provide insight about this relationship by examining existing victimization studies of the general population, women, and hard drug users.

**The general population.** The Nation’s largest victimization survey, the National Criminal Victimization Survey (NCVS), does not ask about victim drug use, but it is used in conjunction with other data to provide insight about drugs and crime. Using NCVS, Markowitz’s (2000) multivariate analysis of almost 450,000 observations found that marijuana decriminalization (a proxy for lower marijuana prices) will result in a higher incidence of robbery and assault while higher cocaine prices will decrease these crimes.<sup>9</sup> Neither measure was significantly related to rape or sexual assault. When victims’ perceptions of offender drug and alcohol use during assaults were used as the dependent variable, the significance of marijuana decriminalization and cocaine prices was ambiguous (significance depends on model specification). For perceived use during robberies, neither was significant. Although Markowitz suggests the perception variable is questionable because of underreporting, these findings raise questions about the causal relationship and the role of drug use by victims, especially marijuana.

Based on an instrument similar to NCVS, Fisher et al.’s (1998) survey of 3,472 randomly selected college students found that regularly taking recreational drugs predicted an increased likelihood of a violent victimization but not of a theft victimization. For the

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<sup>9</sup> The assumption that decriminalization (as opposed to legalization) is an indicator of lower price is questionable. In theory, it might increase demand by reducing the nonmoney costs, which should increase price. However, evaluations of decriminalization in 11 U.S. States, South Australia, the Australian Capital Territory, and the Netherlands fail to show any effects on demand (MacCoun and Reuter, 2001).



general population, Cottler et al.'s (1992) survey of a probability sample of 2,663 household residents found that those who had used cocaine or heroin more than five times in their lives were more than three times as likely to have experienced a physical attack than nonusers. Those who used marijuana more than five times (no use of other drugs) and those who used pills or hallucinogens more than five times were no more likely to have experienced a physical attack than nonusers. This is one of the few studies that presents its results by drug and raises questions about the situations in which hard drug users put themselves.

**Women.** Much of the victimization research focuses on women because many of the studies are about sexual assault. Fisher, Cullen, and Turner (2000) randomly selected 4,446 college women to participate in their National College Women Victimization Study. That study did not find that marijuana use was a significant predictor of sexual victimization and stalking.<sup>10</sup> These findings are consistent with Markowitz's claim that the price of cocaine and marijuana are not significant predictors of sexual victimization. Beyond using prices and self-reports, some researchers have drug-tested rape victims to assess their drug use. Hindmarch and Brinkmann (1999) found that 41 percent of the 1,033 participants tested negative for alcohol and other drugs, 37 percent tested positive for alcohol, 19 percent tested positive for cannabinoids, and 0.6 percent tested positive for flunitrazepam (Rohypnol); however, the lack of information about participant characteristics and site locations would prevent researchers from creating the necessary control groups.

**Drug users.** Tardiff et al. (1994) found that 31 percent of one sample of homicide victims tested positive for cocaine metabolites. This rate did not vary for firearm deaths versus nonfirearm deaths. McElrath, Chitwood, and Comerford (1997) surveyed 308 intravenous drug users who were receiving methadone and/or inpatient drug treatment about their victimization and drug use in the previous 6 months. Those reporting heroin use were significantly less likely to be victims of violent and property crimes. McElrath et al. argue that heroin users sometimes have "running partners" who may also look out for each other, thus decreasing victimization. Crack cocaine users were four times as likely to be victims of property crime than nonusers, leading the authors to suggest "it is possible that the drug-seeking behavior associated with crack-cocaine places users in contact with a larger pool of motivated offenders."

Drug-user-on-drug-user crime was also addressed in Inciardi's delinquency study (1990). Respondents were asked about not only drug-related offenses they committed but also drug-related victimizations; 4.6 percent reported being victims of

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<sup>10</sup> The authors report the statistically significant variables, not the entire model. The entire model is listed in Fisher, Cullen, and Turner (forthcoming) and includes a variable for "Frequency of smoking pot or hashish." Because the significant predictors for stalking are the same in the published and unpublished pieces, we assume the same model was used. Because this is likely to be the model used to predict sexual victimization in the published piece, we report that marijuana use does not predict sexual victimization.

psychopharmacological-related crimes, 39.9 percent reported being victims of drug robberies, and 9.0 percent reported being victims of systemic violence. Although every youth in the survey used at least one drug daily, it is not clear whether the victimizations occurred while the victim was under the influence.

Crime victim surveys and offender surveys require respondents to make attributions about the causes of offenders' behavior. Such causal attributions are susceptible to numerous well-documented biases (e.g., Nisbett and Ross, 1980), but to date there has been little methodological work validating these survey responses.

### **Economic-compulsive violence**

Arrested and incarcerated offenders report that they committed their offenses to raise money to purchase drugs. Of course, this might be a convenient rationalization or excuse for antisocial behavior. Should we believe them?

At least for heroin addiction, the answer is probably yes. Studies of heroin "careers" show that the frequency of criminal activity tends to covary with periods of intense use (see Fagan, 1990, for review), and addicts significantly reduce their criminal involvement during periods of methadone maintenance (see review in Rettig and Yarmolinsky, 1995). But in studies applying the Goldstein taxonomy (see above), economic-compulsive criminality has been relatively rare. White and Gorman (2000) argue, "[B]ecause there is more money in crack distribution than in previous illegal drug markets, drug dealing may have obviated the need to commit property crimes and income-generating violent crimes" (p. 189). Indeed, in our survey of drug sellers in Washington, D.C., in the late 1980s (Reuter, MacCoun, and Murphy, 1990), more than 40 percent reported keeping some drugs for their own consumption—39 percent of crack sellers and 69 percent of heroin sellers. However, the claim about the high returns for crack selling is probably no longer correct. Bourgois (1996) reports that proceeds from crack sales by experienced users who could not maintain legitimate jobs were less than minimum wage.<sup>11</sup>

But the argument that drug selling has replaced other income-generating crime might reflect limitations of recent work. First, as we have noted, most studies applying the Goldstein framework were conducted at the peak of the crack epidemic, when the sheer prevalence of street drug sales was probably at an all-time high (see Saner, MacCoun, and Reuter, 1995). Second, most studies have largely examined crimes with violent outcomes rather than robberies or burglaries in which no homicide occurred. One exception is the Caulkins et al. (1997) study, which attributed a substantial fraction of robberies and burglaries to economic-compulsive crime, and a sizeable fraction of those economic-compulsive crimes to cocaine.

The ADAM Program provides some opportunities for studying these issues (e.g., Arrestee Drug Abuse Monitoring Program, 1999). The ADAM/DUF (Drug Use

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<sup>11</sup> Even if true, high returns from crack selling do not lessen the criminogenic consequences of the market; the issue is what share of revenues are generated by legitimate earnings or welfare and other transfer payments received by buyers.

Forecasting) instrument was modified in 1995 to include a question asking whether the arrestee needed drugs or alcohol at the time of the offense.<sup>12</sup> Appendix B summarizes data for the period 1995 to 1999 for this survey item. As one would expect, these attributions are more common for income-generating offenses (14 percent) than for non-income-generating offenses (10 percent)—a reliable but quite modest difference.

Our understanding and interpretation of economic-compulsive crime ought to evolve as the scientific understanding of drug dependence evolves. Recent decades have seen great progress in the understanding of such phenomena as tolerance, withdrawal, reinforcement, and drug craving (see *Science*, 1997). Leshner (1997, pp. 45–46) notes that many assume the following:

[T]he more dramatic the physical withdrawal symptoms, the more serious or dangerous the drug must be. This thinking is outdated . . . many of the most addicting and dangerous drugs do not produce severe physical symptoms upon withdrawal. . . . What does matter tremendously is whether or not a drug causes what we now know to be the essence of addiction: compulsive drug seeking and use, even in the face of negative health and social consequences.

There are also intriguing new findings from behavioral economics research on the price elasticity of demand for cocaine and opiates—the percentage decline in demand for a 1-percent increase in price. The conventional wisdom is that addicts are relatively insensitive to price, at least in the short run, because they are enslaved to their drug and must find ways to obtain it to avoid withdrawal symptoms. If addicts were relatively insensitive to price, one would expect price increases to produce increased economic-compulsive crime. But recent studies (reviewed in Caulkins and Reuter, 1996) suggest considerable price sensitivity, with elasticities for cocaine ranging from  $-0.7$  to  $-2.0$ . A possible explanation for the high elasticity among heavy users is that they spend most of their earnings on the drug and may respond to the increased difficulty of maintaining desired consumption levels (i.e., avoiding withdrawal) by seeking treatment.

### **Systemic violence**

The third of Goldstein's categories is systemic violence. This has been narrowly interpreted as referring to struggles for competitive advantage. We suggest here that drug

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<sup>12</sup> The question yields four binary variables about whether the arrestee was in need of drugs/alcohol (NEEDNO), alcohol (NEEDALC), cocaine (NEEDCOCR), and marijuana (NEEDMAR) during the crime and one text variable (NEEDOTHR) where the coder is asked to specify if the arrestee mentioned another drug. Curiously, the 1995 (part 2) and 1999 ADAM codebooks do not report any binary variable for heroin—widely believed to be the major source of economic-compulsive crime. Of the 44,000 ADAM arrestees in 1999, we estimate (using the open-ended field responses) that about 1,100 reported they needed heroin, 1,800 needed alcohol, 2,150 needed cocaine/crack, and 700 needed marijuana. Of those reporting that they needed heroin, about 35 percent committed income-generating crimes.

markets generate violence in a variety of ways and that market violence varies systematically over time and place.

**A brief history of the markets.** There was an epidemic of initiation into heroin use in the 1970s; after that, heroin initiation rates remained low until the late 1990s. The number of heroin addicts (a function of the number of initiates and the length of their addiction careers) remained fairly stable at about 750,000 from 1981 to 1997.<sup>13</sup> During that period, most heroin purchases were made by an aging cohort of experienced users.

Powder cocaine and crack had a similar dynamic, only with different parameters. Powder cocaine initiation rates were high from about 1975 to 1988; the number of dependent users has been quite stable since about 1988. The crack epidemic came later, from about 1982 to 1990 (depending on the city; see Blumstein and Cork, 1996). Estimates of the number of dependent users of either crack or powder cocaine range from 600,000 to 3,600,000 (see Rhodes et al., 2000).

Many retailers are now also frequent users (Arrestee Drug Abuse Monitoring Program, 1999). Selling seems to be opportunistic for many users; sudden access to an unusually large source of cash may lead a regular buyer to become a seller for a day. Thus, at the low end of the market, it may be difficult to distinguish systemic from psychopharmacological violence.

Enforcement against these markets, as measured by years of jail time per ton of drugs, probably declined through the early 1980s but then intensified from 1985 onward. In 1990, the Colombian government aggressively attacked the principal exporters of cocaine from Colombia. There are a number of indications that this led to a temporary tightening of the cocaine market; otherwise, prices have declined throughout the period, while consumption has been declining modestly since 1988.

**Conceptual issues.** The markets for illegal drugs operate without the usual protections against fraud and violence offered by the civil tort system. The state, instead of attempting to facilitate transactions, aims to disrupt them. Contracts cannot be enforced through written documents and the legal system; agreements are made hurriedly, sometimes in ambiguous code, and orally.<sup>14</sup> Territories cannot be allocated through bidding for desirable locations because there is no enforceable ownership of property for these purposes.

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<sup>13</sup> ONDCP reports, based on Rhodes et al. (1995, 2000), that the prevalence of frequent use fell by one-third between 1988 and 1993 and then returned to its 1988 level by 1998. It is difficult to identify supporting evidence for such a dramatic fluctuation in the figures.

<sup>14</sup> The bookmaking business has certainly generated written records; but that is more central to the business itself, which involves the extension of credit and usually numerous near-simultaneous transactions between any one buyer and seller.

Yet the illegality itself is insufficient to generate high levels of violence in the market. Prostitution, although frequently unsightly and sometimes a nuisance, does not generate much by way of additional violence. Bookmaking, notwithstanding the drama of the film *The Sting*, was also a generally peaceful affair; bookies were more likely to die in bed than on the job. Even for some drugs, the markets generate little violence; marijuana in general does not spark much injury as the result of competitive or transactional disputes.<sup>15</sup>

Some drug markets, however, are clearly violent; many participants are at risk of being killed or seriously wounded by others in the same business, either as buyers or sellers, and there are unintended shootings of innocent bystanders. The crack market is thought to be particularly prone to market-related violence.

Why are these drug markets, particularly for crack, so violent? We suggest that four factors contribute:

1. *The youth of participants.* Rates for violent crime peak early, at about ages 18–22. The young are particularly likely to lack foresight and thus engage in violence to settle disputes. The crack market was the first mass drug market in which most of the sellers were young.
2. *The value of the drugs themselves.* The cocaine that fills a plastic sandwich bag is worth thousands of dollars. The return to sudden, situational violence could be very high.
3. *The intensity of law enforcement.* Transactions are conducted under considerable uncertainty as a consequence of increased law enforcement. Intensified enforcement increases the incentives for violence by raising the adverse consequences of identifying someone as a potential informant.
4. *The indirect consequence of drug use.* Users are more violent and aggressive, and this encourages dealers to prefer selling out of doors or in highly protected settings. It also promotes unreliable behavior among user/dealers and thus more retaliation by their suppliers.

It is probably the combination of these factors, rather than any one of them, that accounts for the extraordinary violence associated with crack markets in the late 1980s. That violence seems to have fallen substantially in the late 1990s, perhaps reflecting the aging of participants in crack markets (Golub and Johnson, 1997), although violence itself, as well as enforcement, may also have selected out the most violent participants; Taylor, Caulkins, and Reuter (2000) present a model in which violence declines with more intense enforcement as a consequence of selective incarceration.

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<sup>15</sup> In the District of Columbia in the mid- to late 1990s, it was reported that some street gangs were in violent disputes over the marijuana market (Pierre, 1996; Lattimore et al., 1997).

**Competitive and internal violence.** Attention has been given to violence generated by competition between sellers. Less attention has been given to violence within selling organizations, although the older literature on organized crime and illegal markets reported a great deal on this (e.g., Block, 1980).

Criminal organizations are hindered internally by lack of access to the civil courts. Employment contracts cannot be enforced except privately. Managerial succession is complicated by the specificity of reputation within the organization; a promising mid-level manager cannot readily provide evidence of performance to another potential employer so higher level managers get weaker market signals and may withhold deserved promotions or merit increases. This gives incentives to lower level agents to use violence for upward mobility.

Symmetrical with successional violence is disciplinary violence. Managers have reason to fear subordinates who can provide evidence against them; the longer lasting the relationship, the greater the potential for harm from informing. Thus, managers may use violence as a tool to reduce risks of informing. They have more incentive for doing so than do high-level dealers in transactions with low-level dealers because the information about these acts will spread more rapidly and extensively.<sup>16</sup> There are numerous stories of this kind of violence in Colombian drug-dealing organizations.

Thus, the violence in atomistic markets has different sources than that in markets serviced by larger selling organizations. Which generates greater violence from a given set of participants cannot be determined theoretically, but some of the decline in market-related violence may reflect changes in organizational structure.

**Other market characteristics and violence.** Exhibit 1 presents a simple classification of markets according to whether buyers and sellers come from the neighborhood or elsewhere. We believe that this taxonomy, originally identified for purposes of analyzing vulnerability to enforcement (Reuter and MacCoun, 1992), may also be useful in the study of violence. Markets characterized by mostly resident dealers and customers are labeled *local markets*. *Export markets* are ones in which residents of the neighborhood sell drugs to nonresidents. Markets in which mostly nonresident dealers sell to local residents are characterized here as *import markets*. Finally, markets in which both sellers and customers are mostly nonresidents are labeled here as *public markets* because they tend to occur at such large public locations as parks, train or bus stations, or schoolyards.

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<sup>16</sup> Smith and Varese (2001) model the use of coercive violence in markets for Mafia extortion; the model can be applied to intraorganizational violence as well.

**Exhibit 1. Types of Illicit Drug Markets**

		<b>Customers</b>	
		<i>Mostly Residents</i>	<i>Mostly Outsiders</i>
<b>Dealers</b>	<i>Mostly Residents</i>	Local market	Export market
	<i>Mostly Outsiders</i>	Import market	Public market

Each class of market differs in the potential for violence. Local markets, precisely because they involve buyers and sellers who know each other, do not lend themselves to territorial competition. At the other extreme are public markets, in which buyers and sellers cannot readily find each other except at specific locations; the incentives for territoriality are consequently greater.

Transactional violence may also vary in these dimensions. Local markets discourage cheating of buyers as a consequence of the ongoing connections between buyers and sellers; a local customer is more likely to spread information effectively to other potential customers than one who has little connection to other buyers. It is not clear whether much of the transactional violence comes from buyers, as opposed to associates and rival sellers.

If this is correct, then the maturation of cocaine and heroin markets will tend to reduce market-related violence by reducing the size of all but local markets. Moreover, as a result of the dissemination of beepers and cell phones, an increasing share of cocaine transactions may be occurring in locations (apartments, restaurants, offices) that are agreed on by the buyer and seller for their mutual convenience. Johnson, Golub, and Dunlap (2000, p. 191, table 6.1) report that in New York City in the 1990s, the “seller style” included phone and delivery services as well as freelancers. Poor and socially isolated cocaine users still frequently conduct transactions in exposed locations, chosen precisely because they facilitate the coming together of buyers and sellers. So probably do many heroin addicts, given their generally impoverished state. The ability to choose locations on the basis of specific situational need not only reduces territorially motivated violence but also reduces the vulnerability of buyers to robbery and other victimization because fewer of them need to congregate at specific locations, which thus become less attractive to predators.

**The Temporal Dynamics of Drug Markets**

In the past several years, numerous authors have examined the emergence and decline of crack markets as a key factor in the steep rise in American violence from 1985 to 1990, and the even steeper drop since 1993 (see Blumstein and Wallman, 2000). In our view, the case for crack’s role in the crime rise is quite compelling; its role in the post-1993 decrease is more subtle and by no means an open-and-shut case.

Many discussions of the crime drop fail to distinguish between a decline in the crack market and a decline in the linkage between crack and crime—but a decline in the crack-crime link is part of the crime drop outcome to be explained. It is true that DUF (and now

ADAM) data show declines in positive cocaine tests among arrestees in many cities (e.g., Arrestee Drug Abuse Monitoring Program, 1999). And the reduced violence attributable to crack selling has made crack markets less visible. But nationwide, hardcore cocaine use remained surprisingly stable during the 1990s (Rhodes et al., 2000). Indeed, from 1990 to 1998, there were rising cocaine mentions in emergency rooms (Substance Abuse and Mental Health Services Administration, 2001) and rising cocaine seizures. Nevertheless, recent multicity comparisons (Baumer et al., 1998; Lattimore et al., 1997) indicate reliable positive correlations between various indices of crack use and homicide and other offense rates.

Various experts have suggested that the changing dynamics of drug markets may matter as much or more as any decline in total market activity (e.g., Ousey and Lee, 2000). Below, we consider a few more complex accounts of the link between crack market dynamics and violence.

**NDRI'S conduct norm account.** Johnson and his colleagues at NDRI (Lipton and Johnson, 1998) have produced a valuable interdisciplinary, multimethod program of research on street drug markets in New York, spanning several decades. They recently offered an account of the decline in drug-related violence based on the notion of “conduct norms” (Johnson, Golub, and Dunlap, 2000), arguing that New York street drug markets have passed through three phases. (They vacillate between “period” and “cohort” versions of the story.) The “heroin injection era” peaked during 1960–73; the “cocaine/crack era” peaked during 1984–89; and the “marijuana/blunts era” started around 1990. Associated with each era are distinct birth cohorts with distinctive behavioral patterns. “HeroinGen” drug users (born 1945–54) were active in drug sales and property crime, but gun use was relatively rare. “CrackGen” drug users (born 1955–69) frequently participated in robbery and used guns for protection and reputation. Finally, “BluntGen” drug users (born 1970–79) are less likely than early cohorts to engage in violence.

Drawing on their rich ethnographic database, Johnson and colleagues (2000) argue that these behavior changes reflect two successive transformations of conduct norms for appropriate behavior in the drug-using community. For example, in CrackGen's “Subculture of Assault,” a shared norm counseled: “Be aggressive and threatening to avoid robbery . . . . Carry weapons for protection. . . . Threaten or assault those who attempt to sell crack in your territory. Maintain your reputation as dangerous, tough, and ‘crazy,’ regardless of the physical harm inflicted or suffered” (p. 181). But for the BluntGen, the norm states: “Don't use crack. Crackheads are s---! . . . Addicts are the scum of the earth. Stay safe, stay alive. Don't mix cocaine or heroin with my marijuana. Shun and exclude heroin and crack users from peer groups” (p. 185).

This norm account is fascinating and quite plausible. From a policy perspective, it would be tremendously useful to find a way to preserve and promote the BluntGen's more pacifist stance (though not, of course, their consumption of blunts). Still, the evidence is causally ambiguous. Are these conduct norms actually *causes* of the decline in violence during the 1990s, are they *descriptions* of it, or are they *consequences* of it?



There is little doubt that conduct norms exist and are important in shaping deviant behavior. Cialdini, Kallgren, and Reno (1991) make a useful distinction between *injunctive norms* (what others think I should do) and *descriptive norms* (what others are actually doing). There is ample evidence that purely descriptive norms—changes in the local prevalence of a behavior—can have a self-reinforcing action. But attitudes and norms are shaped by behavior as well as shaping it; research on cognitive dissonance theory and self-perception theory suggest that such conformity-based behavioral changes will tend to produce corresponding (but retrospective) changes in relevant attitudes (see Eagly and Chaiken, 1993). Controlled social psychology experiments show that norm diffusion effects occur and that they can be strong, but these experiments also show that apparent norm effects are sometimes spurious (e.g., Kerr et al., 1987).

Clearly, research on drug-using norms cannot move to the laboratory—although one can imagine informative scenario-based experiments embedded in field interviews. But it would be enormously useful to make additional use of the NDRI data (and related data sources, such as the Office of National Drug Control Policy’s *Pulse Check*), linking the timing of the ethnographic material more precisely to month-to-month quantitative archival data on drug selling (or its proxies) and violent crimes. Furthermore, archives of ethnographic data collected in different cities during the past decade might be reanalyzed to search for cross-city norm differences that might correlate with cross-city differences in violent crime. Ideally, one might develop methods for identifying “leading indicators” of emerging trends in drug using, drug selling, and drug-related violence.

**Blumstein and Cork’s drug-gun diffusion account.** In a series of articles (see Blumstein, 2000a; Blumstein and Cork, 1996; Cork, 1999), Alfred Blumstein and his collaborator Daniel Cork hypothesize a causal chain linking the late 1980s crack epidemic to rising violence nationwide. According to Blumstein, the 1980s growth in illicit drug markets, together with stringent enforcement crackdowns, led to the recruitment of juvenile drug sellers. The intense market competition together with the recruitment and rewarding of particularly aggressive youths created a need for sellers (as well as nonseller youths in market neighborhoods) to be armed. This increased demand fueled an expansion in the illicit gun market and a diffusion of guns. The linkage between drug selling and gun possession is well established (see Decker, Pennell, and Caldwell 1997; Sheley, 1994; Tardiff et al., 1994).<sup>17</sup> Cork (1999) found support for the temporal sequence of the Blumstein account using a sophisticated diffusion modeling analysis of time-series data from multiple cities.

The Blumstein model is a compelling account of the rise of violent crime, but more work is needed to establish its explanatory power as an account of the subsequent decline in violence. The model is not inconsistent with that decline—a decline in the crack market should have reduced the need to be armed—but future research will have to assess

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<sup>17</sup> Decker, Pennell, and Caldwell (1997) did not find that drug users (rather than sellers) were more likely to be carrying a gun than other arrestees.

whether declines in the prevalence of drug selling (as opposed to changes in other features of the markets) have produced reductions in the likelihood of gun possession and gun violence.

**The maturation of addicts and of illicit drug markets.** Because of reduced initiation rates, it appears that the hardcore cocaine-using population consists mostly of an aging cohort who started using in the late 1980s, in much the same way that heroin addicts disproportionately belong to cohorts who initiated use in the 1970s. If this is correct, drug-related criminality should continue to decline, absent new waves of initiation, as addicts “mature out” of violent crime or die from drug-related illnesses or natural causes.

Many observers were struck by the violence of 1980s crack markets relative to earlier heroin and marijuana markets. Many have speculated that such markets “mature” over time as (a) dealer territories are firmly established, (b) casual users drop out of the market, and (c) hardcore users establish reliable dealer connections. All these factors suggest a shift from open-air public markets toward more clandestine arrangements that seem less prone to violence.<sup>18</sup> But at present, this is largely speculative; there is anecdotal and ethnographic evidence for such changes but little systematic longitudinal research that establishes a clear trajectory over time.

## **The Consequences of Prohibition and Its Enforcement**

### **Drug involvement as crime**

The convention in articles on drugs-crime linkages is to state that for the purposes of the essay, the fact that drug use (and sometimes drug selling) per se is a crime is not relevant to the analysis. But the illicit status of street drugs is vitally important to the analysis in several ways. First, drug prohibition is arguably necessary for Goldstein’s category of systemic (market-related) violence (MacCoun and Reuter, 2001).<sup>19</sup> We simply do not observe routine violence among alcohol or tobacco vendors. Second, Goldstein’s economic-compulsive violence, although not caused by prohibition, is surely exacerbated by it because drug prohibition almost certainly raises the price of heroin or cocaine far above what would be their retail market prices (MacCoun and Reuter, 2001). Finally, there are reasons to believe that the illicit status of drugs might have subtle criminogenic effects through several different mechanisms, including forbidden fruit effects, labeling or stigmatization effects, and “stigma swamping.”<sup>20</sup> Here we highlight two such mechanisms.

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<sup>18</sup> Alfred Blumstein appeared to endorse this account in his public comments at the 2000 Annual Meeting of the American Society of Criminology.

<sup>19</sup> Necessary, but not sufficient; see Zimring and Hawkins, 1997; Ousey and Lee, 2000.

<sup>20</sup> The term “stigma swamping” was suggested to us by Jon Caulkins as an apt label for a phenomenon about which many have speculated (e.g., Jacobsen and Hanneman, 1992; McGraw, 1985; Petersilia, 1990)—the notion that the stigma associated with arrest and even incarceration is reduced by the sheer prevalence of those sanctions. The term “stigma swamping” is an informal control counterpart to Kleiman’s (1993) formal control version, “enforcement swamping.”

**Incapacitation and replacement effects.** Several authors (e.g., Blumstein, 2000b; Freeman, 1996; Kleiman, 1997) have suggested that the incarceration of drug sellers is likely to produce a weaker incapacitation effect than would occur for other offense categories, such as property and sex offenses. Indeed, some have speculated that a *replacement* process might even produce a net increase in the prevalence of drug selling. In a highly competitive illicit market, the incarceration of a drug seller creates lucrative drug-selling opportunities (customers and sales territory) for others. According to Blumstein (2000b):

The pathological rapist's crimes almost certainly are not replaced on the street, and so one can expect his full array of crimes to be incapacitated . . . . A burglar's crimes may be replaced if he is serving a fence, who would recruit a replacement; alternatively, if he is simply operating on his own, the crimes are not likely to be replaced. And the participant in organized vice activity such as drug dealing would be likely to have his transactions replaced by whatever organizational structure is serving the market demand. That replacement could be achieved by some combination of recruiting new sellers or by increasing the rate of activity of sellers already active in the market.

Freeman (1996) offers a formal economic model that interprets this replacement effect in terms of the elasticity of supply of dealers with respect to drug market wages. The supply of dealers should reflect this sensitivity to wages as well as changes in earnings opportunities in the licit market (i.e., shift in the supply curve) and the demand for drugs (i.e., shifts in the demand curve).

At present, there is surprisingly little evidence either for or against the replacement hypothesis. One indirect argument for its plausibility is that the explosive growth in the incarceration of drug sellers during the past decade was not accompanied by increases in street cocaine prices, as one might expect if the supply of street dealers was tightening (Blumstein, 2000b; see also DiNardo, 1993). Indeed, street prices have dropped substantially (Rhodes et al., 2000). Another indirect argument is the sheer prevalence of drug market participation in some communities during the late 1980s, when drug sellers were being incarcerated at record levels. For example, Saner et al. (1995) estimated that in Washington, D.C., during 1985–91, nearly one-third of African-American male residents from the 1964–67 birth cohorts were charged with drug selling.

Statistical analyses of archival data might test the replacement hypothesis by looking for evidence of increases in the initiation to drug selling as a function of the arrest and incarceration of dealers. Ethnographic studies might examine whether recruitment activities increase following police crackdowns and whether existing street dealers increase their activity. But isolating replacement effects will be tricky; note that general deterrence and replacement effects, if they exist, will offset each other, which may make it hard to find *any* effect of sanctions on subsequent dealing.

**Can enforcement amplify violence?** Several authors (Eck and McGuire, 2000; MacCoun and Reuter, 2001, chapter 6; Reuter, 1989; Riley, 1998) have argued that under certain conditions, aggressive drug enforcement might actually increase drug-related violence. Rasmussen, Benson, and their associates have examined whether more intense drug enforcement increases violent crime; much of this work is summarized in Rasmussen and Benson (1994). The mechanisms involved are quite varied. For example, enforcement might lead to more violence in competition. Benson and colleagues (1992) found that the violent crime rate in a community increased with more drug arrests in a neighboring community. This, they argue, is a displacement effect; dealers move from the targeted community to the neighboring one and struggle over the establishment of territories. Another mechanism works through the limited capacity of the correctional system; increased prison space for drug offenders reduces the penalties for other crimes, including violent crimes, and thus induces higher victimization. Benson and Rasmussen (1991) argue that, even assuming that prison is effective only through incapacitation and not deterrence, the observed rise in the resources devoted to drug enforcement in Florida in the 1980s might have increased other crime by 10 percent.

**Supply reduction versus violence reduction.** An important dialogue with respect to drug users involves the prospects and tensions of integrating use reduction strategies with harm reduction strategies (MacCoun, 1998; MacCoun and Reuter, 2001). We see an analogous issue with respect to the policing of drug markets (MacCoun and Reuter, 1994). Police tactics designed to reduce the supply of drugs (and of drug suppliers) may or may not be the most effective means of reducing the total social harm caused by street drug selling. Some tactics might directly reduce drug-related violence.

One example involves efforts to drive dealers indoors (see Kennedy's 1993 analysis of Tampa's QUAD program). Of course, crack houses are not without their harms. In an ethnographic study of the crack market in Detroit, Mieczkowski (1990, p. 90) concludes that "tavern-style crack houses may encourage and make possible hypersexuality among participants and thus increase the STD and HIV rates. The use of barter as a supplement to a cash economy in the crack trade represents further complications in creating social policies in reaction to this behavior . . . ." Still, indoor markets are likely to be less violent. But the effects are multiple and hard to balance. On the one hand, indoor markets are less susceptible to police surveillance or sting operations. On the other hand, driving dealers indoors might increase users' search costs (Moore, 1990) and thus reduce demand. Consumers in export markets would bear a disproportionate share of these search costs because the locals often know the local dealers and could easily locate them. This might lead to new local markets in the areas from which the export consumers are coming and the associated neighborhood violence that Benson et al. (1992) examined. Further research on these issues is needed.

**Heroin maintenance.** If the drugs-crime link is mediated by the high price and conditions of sale of a drug, and if a relatively small number of frequent users are responsible for much of the crime, then perhaps allowing access to that drug legally for those least able to quit might reduce associated crime. There is increasing information and interest in exploring just this possibility for heroin (see MacCoun and Reuter, 2001).

In January 1994, Swiss authorities opened a number of government-administered heroin maintenance clinics.<sup>21</sup> Registered addicts can inject heroin at a government clinic under the care of a nurse up to three times a day, 7 days a week. Patients have to be over 18, have injected heroin for 2 years, and have failed at least two treatment episodes. By the end of the initial research trials of this program, more than 800 patients had received heroin on a regular basis without any leakage into the illicit market. No overdoses were reported among participants while they stayed in the program. A large majority of participants had maintained the regime of daily attendance at the clinic; 69 percent were in treatment 18 months after admission. This was a high rate relative to those found in methadone programs. About half of the “dropouts” switched to other forms of treatment; some chose methadone and others chose abstinence-based therapies. The crime rate among all patients dropped during the course of treatment, use of nonprescribed heroin dipped sharply, and unemployment fell from 44 to 20 percent.

Critics, such as an independent review panel of the World Health Organization, reasonably asked whether the claimed success was a result of the heroin or the many additional services provided to trial participants. And the evaluation relied primarily on the patients’ own reports, with few objective measures. Nevertheless, despite the methodological weaknesses, the results of the Swiss trials provide evidence of the feasibility and potential effectiveness of this approach. In late 1997, the Swiss government approved a large-scale expansion of the program. A similar program is under development in the Netherlands and in Hamburg, Germany.

The proposal to study heroin maintenance on a trial basis in the United States is politically controversial and would be logistically difficult. Moreover, the normative and moral issues are clearly complex (MacCoun and Reuter, 2001, chapter 15). But we should not reflexively dismiss, without serious analysis, an intervention that could in theory (and with some fragmentary evidence) help reduce the criminality of existing heroin users and perhaps shrink the heroin street market, thereby creating new barriers to heroin initiation. If nothing else, serious discussion of such a program, and perhaps even formal modeling of alternative hypotheses about its likely effects, might significantly advance our thinking about drug market dynamics and the possibilities for effective intervention.

### **Summing Up: Directions for Future Research**

Here we summarize our suggestions for profitable future research, in the order in which we discussed them:

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<sup>21</sup> The earlier British experience with prescription heroin is more notorious but less informative; see MacCoun and Reuter, 2001, chapter 12.

- Methodological attention to the measurement of Goldstein's taxonomy of drugs-violence links and to the validation of self-reports of victim and offender causal attributions for the role of drugs in criminal offenses.
- Greater attention to the role of drug use in criminal victimization.
- Retrospective historical analysis of long-term trends in drug use, drug arrests, and drug-related crime, including recoding of ethnographic databases, application of the Goldstein coding scheme to homicide case files, age/period/cohort analyses, and econometric time-series analyses.
- Determination of the causal relationships underlying comorbid drug abuse and mental illness conditions.
- Extension and replication of the rich experimental literature on situational moderators of alcohol-related aggression, as applied to other drugs.
- Econometric analysis of the effects of drug price changes on drug-related criminality.
- Assessment of the effects of the availability of licit work and licit wage levels on criminality.
- Additional multicity analyses (and cross-neighborhood analyses within cities) with an emphasis on understanding heterogeneity in drugs-crime relationships: Spatial analyses, analyses of variation in the demand for different drugs, gang versus nongang involvement, ethnic and other demographic groupings, indoor versus outdoor markets, import versus export versus local versus public markets, etc.
- Estimation of incapacitation versus replacement effects resulting from the incarceration of drug sellers.
- Simulation modeling and eventual pilot tests of the efficacy of heroin maintenance.

One other topic that was not even hinted at in our analysis and has been almost totally neglected in the empirical research literature also should receive attention: the likelihood of causal linkages between illicit drug use and such white-collar crimes as corruption, fraud, and embezzlement.<sup>22</sup>

This is a long list of topics. That in itself is a reminder of how little has been done to implement and build on Goldstein's insightful taxonomy. Advances will require an acceptance of the fact that drugs may differ widely in the extent and form of their criminogenic effects. That substantially complicates an already difficult enterprise but is likely to be the source of considerable policy insight.

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<sup>22</sup> We thank Terence Dunworth for making this observation.

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## Appendix A. Other Applications of Goldstein's Framework

### New York

Even excluding the works of Goldstein and his colleagues, much of the work using the tripartite framework focuses on New York during the mid- to late 1980s. The U.S. Sentencing Commission (1995) used Goldstein's framework to compare the incidence of violence related to the use of powder cocaine and crack. Using expert testimony and existing literature, and largely focusing on the studies done in New York,<sup>23</sup> the Commission concluded that crack was a greater source of systemic violence than powder cocaine, that economic-compulsive violence was relatively rare among cocaine users, and that "neither powder nor crack cocaine excite or agitate users to commit criminal acts and that the stereotype of a drug-crazed addict committing heinous crimes is not true for either form of cocaine" (p. x).

### Miami

Inciardi's (1990) survey of 611 serious juvenile delinquents in Miami and Dade County assessed offender self-reports of drug-related systemic, economic-compulsive, and psychopharmacological crime. In the 12 months prior to the interviews, which occurred from 1985 to 1989, about 5 percent of the sample reported being a psychopharmacological victim, 59 percent reported having committed robberies ("the majority of which were committed to purchase drugs," p. 100), and 8 percent reported being the perpetrators of systemic crimes. Inciardi also administered a supplementary crack survey to 254 of these delinquents from October 1986 to November 1987. This survey and other data analyses by Inciardi led him to conclude that the Miami crack market was much less violent and less (juvenile) gang-related than portrayed in the media and may be "kindler and gentler" than other large cities. He also reported that the worst years for murders in Miami were during its cocaine wars in the early 1980s. Inciardi found that "those more proximal of the crack distribution market were more involved in violent crime" (p. 104). This study has at least two advantages over Goldstein et al. (1989): Crimes other than homicide were considered, and respondents were asked about drug-related victimization. But the drug associated with these crimes was not listed as it was in the Goldstein et al. study.

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<sup>23</sup> New York: Chin and Fagan, 1992; Fagan and Chin, 1990; Goldstein et al., 1989. Miami: Inciardi, 1990; Inciardi and Pottieger, 1991; Inciardi and Pottieger, 1994. Los Angeles: Klein et al., 1991. Detroit: Mieczkowski, 1990.) The Commission also cited an unpublished DEA report and a review article by Fagan (1990). The former found "that seven crack-related homicides were 'multi-dimensional,' with systemic being one of the dimensions," but it is not clear where these homicides occurred and what the other dimensions were.



## Chicago

One source that was developed to assess homicide fluctuations and motivations is the Chicago Homicide Dataset (CHD). Detailed information on every homicide in the records of the Chicago Police Department is available for 1965–95 (Block, Block, and Illinois Criminal Justice Information Authority, 1998). CHD does not include data on specific drugs, but its motive classification fits nicely with the tripartite framework. The four types of drug-related motives for homicide are selling or drug business (this includes any homicides during or because of a transaction);<sup>24</sup> an argument over possession, use, quality, or cost of drugs; getting money for drugs or acquiring drugs for personal use; and other drug involvement (e.g., baby dies of malnutrition because the parents were high; offender was drug crazed).<sup>25</sup>

The per capita drug-related homicide rate remained fairly stable from 1973 to 1984 (around 0.4 homicides per 100,000 Cook County residents), with “arguments” at a slightly higher rate from 1974 to 1977. Homicide rates related to all of the motives fluctuated from 1984 to 1995, but it is interesting that the aggregate rate for every motive except “business/transaction” was virtually the same for 1984–85 and 1995 (still close to 0.4). The advent of crack likely explains why homicide rates related to all of the motives increased from 1985 to 1989, but it is of special interest that the “business/transaction” motive skyrocketed during those years. Clearly, more might be learned by examining the specific drugs associated with “business/transaction” homicides in Chicago over this time period.

## Eight-City Study

To learn why city homicide rates did not change uniformly in the early 1990s, Lattimore and colleagues (1997) comprehensively examined homicide in eight cities for 1985–94: Atlanta, Detroit, Indianapolis, Miami, New Orleans, Richmond, Tampa, and Washington, D.C. In addition to comparing ADAM results with UCR data for these cities, Lattimore et al. interviewed key policymakers, law enforcement and criminal justice officials, and community leaders in the cities. These interviews revealed that crack was most likely associated with community violence and homicide, while the market violence associated with marijuana was a growing concern in Washington, D.C., and Richmond. Methamphetamines, LSD, PCP, and heroin were not associated with homicide rates and were rarely mentioned by local authorities. It is important to note that Lattimore et al.

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<sup>24</sup> The codebook reads: “Use code 1 when BUSINESS is the motive for the incident (e.g., both victim and offender involved in dealing, victim killed as a bystander of a drug business hit, victim killed because he interfered with the business, victim killed during a drug transaction or because of a drug transaction).”

<sup>25</sup> Cases where there were no positive evidence or no information are not included. Of the 23,817 homicides occurring between 1964 and 1995, 22,282 either had no information about drug motive or were not drug related. Unfortunately, the non-drug-related homicides cannot be separated from the no-information group.

found that in many cases the perceptions about local drug trends differed substantially from drug trends as measured by DUF/ADAM.

Lattimore and colleagues question the relationship between crack and market violence because the crack markets were described as highly competitive in cities in which the homicide rate was declining, increasing, or remaining the same (1997, p. 89). But it is not clear that the same conclusions could be drawn if disaggregated homicide rates (by circumstance) were considered. The authors not only looked at how competitive the market was, they also considered the stability of prices, transactions, and participants. Their argument that links between drugs and homicide “appear to fall mainly on the use side” (p. 92) relies on their findings about participants:

The general structure of participation in crack markets and the nature, duration, and consequences of the “crack high” may account for the relationship between the cocaine prevalence rates among arrestees and homicide rates. Crack users reported the large number of “buys,” extensive networks of potential suppliers, and less reliance on a primary supplier, suggesting that transactions were likely to occur in an opportunistic manner. The high from crack lasts as little as 10 minutes; thus, when the high wears off, the crack user may still be in the market and motivated to buy more of the drug—and to commit a crime to obtain the money to do so. (p. 141)

This is essentially an argument about economic-compulsive violence, which other crack-specific studies have dismissed (see U.S. Sentencing Commission, 1995). While this difference may be geographic (the other studies were primarily done in New York City), it may also be the artifact of a bivariate analysis of two datasets (UCR and ADAM) that did not always cover the same populations.

## **National Estimates**

Others used nationwide data to learn more about the drugs-crime nexus. Caulkins and colleagues (1997) used the tripartite framework to assess the impact that mandatory minimum sentences have on cocaine consumption and subsequent crime. Relying on estimates from Goldstein and his colleagues (Goldstein, Brownstein, and Ryan, 1992; Spunt et al. 1990; Spunt et al., 1995), the National Criminal Victimization Survey, inmate surveys, and murder data for large urban counties, Caulkins et al. determined the number of systemic, economic-compulsive, and psychopharmacological crimes that were drug related. Their next step was to determine how much of this crime was related to cocaine. Based on information from Rhodes et al. (1995), the ADAM Program, the Office of National Drug Control Policy (1995), and Goldstein (Goldstein et al., 1989; Goldstein, Brownstein, and Ryan, 1992; Spunt et al. 1995), Caulkins et al. (1997) suggest that cocaine accounts for about 75 percent of drug-related economic-compulsive crime, 50 percent of illicit psychopharmacological homicides, and 75 percent of systemic homicides.

## Appendix B. Arrestees Needing Drugs and/or Alcohol at the Time of the Offense, 1995–99

City	Income-Generating Offenses		Non-Income-Generating Offenses	
	Total	% needing D/A	Total	% needing D/A
Albuquerque	249	40%	1,308	19%
Anchorage	105	16%	723	9%
Atlanta	1,526	17%	2,833	9%
Birmingham	1,216	17%	3,646	12%
Chicago	1,825	26%	4,183	17%
Cleveland	1,569	16%	4,191	12%
Dallas	1,934	12%	3,432	8%
Denver	1,195	8%	5,842	6%
Des Moines	182	20%	744	10%
Detroit	903	9%	2,876	8%
Ft. Lauderdale	1,209	19%	4,032	13%
Houston	1,257	6%	4,252	5%
Indianapolis	2,447	15%	5,248	8%
Laredo	185	13%	531	5%
Las Vegas	355	26%	1,638	14%
Los Angeles	4,022	10%	6,951	7%
Miami	1,395	15%	2,182	11%
Minneapolis	179	21%	953	10%
New Orleans	2,072	16%	4,020	10%
New York	3,162	16%	6,247	16%
Oklahoma City	394	14%	1,298	9%
Omaha	678	13%	3,249	5%
Philadelphia	2,201	21%	1,645	17%
Phoenix	1,828	15%	5,929	7%
Portland	1,550	11%	5,032	10%
Sacramento	389	14%	1,307	9%
Salt Lake City	333	17%	1,044	13%
San Antonio	2,060	8%	5,570	4%
San Diego	2,407	8%	3,982	7%
San Jose	1,549	8%	4,441	6%
Seattle	301	21%	1,090	13%
Spokane	261	20%	1,063	12%
St. Louis	1,160	17%	2,592	12%
Tucson	308	14%	1,965	9%
Washington, DC	1,529	10%	3,200	8%
<b>TOTAL</b>	<b>43,935</b>	<b>14%</b> <b>(n=6,141)</b>	<b>109,239</b>	<b>10%</b> <b>(n=10,431)</b>

**Notes:** Percentages rounded to nearest whole percentage point. Observations with missing data for any of these variables were deleted. Sixty-four observations from 1998 and 374 observations from 1999 were not considered because of a unique charge-coding strategy. Income-generating offenses include burglary, burglary tools, prostitution, embezzlement, larceny/theft, pickpocketing/jostling, robbery, stolen property, stolen vehicle, and drug sales.

**Source:** 1995–99 data from the Arrestee Drug Abuse Monitoring Program.